

1/ ¹⁹ 39. The method as claimed in claim ¹⁸ 38, wherein the first and second polishing pressures are produced by air pressure.

²⁰ 40. The method as claimed in claim ¹⁸ 38, wherein the first and second polishing pressures are produced by pressurized fluid.

²¹ 41. The method as claimed in claim ¹⁸ 38, wherein the polishing pressure applied to the central portion of the workpiece is larger than the polishing pressure applied to the outer circumferential portion of the workpiece.

²² 42. The method as claimed in claim ¹⁸ 38, wherein the polishing pressure applied to the outer circumferential portion of the workpiece is larger than the polishing pressure applied to the central portion of the workpiece.

²³ 43. The method as claimed in claim ¹⁸ 38, wherein the polishing pressures can be independently changed at different locations of the workpiece.

²⁴ 44. The method as claimed in claim ²³ 43, wherein the number of different locations where the polishing pressures can be independently changed includes at least three different locations.

Sub F4 ~~45. A method of polishing a surface of a workpiece comprising:~~

~~holding a workpiece by a top ring;~~

~~pressing the workpiece by the top ring against a polishing surface;~~

~~providing a plurality of independently adjustable polishing pressures for application to the workpiece; and~~

~~applying a pressing force to the workpiece by the polishing pressures to polish the workpiece in such a state that the pressing force is controllable and adjustable in both a central portion and an outer circumferential portion of the workpiece.~~

1/ 24 46. The method as claimed in claim 45, ²⁵ further comprising pressing a presser ring against the polishing surface.

27 47. The method as claimed in claim 46, ²⁶ wherein the pressing of the pressing ring is achieved by applying an adjustable pressure to the presser ring.

28 48. The method as claimed in claim 47, ²⁷ wherein the pressure applied to the presser ring is produced by air pressure.

Sub F5 29 49. A workpiece carrier for holding a workpiece and pressing the workpiece against a polishing surface, said workpiece carrier comprising:

a top ring for supporting the workpiece to be polished;
and

a pressing mechanism for pressing the workpiece against the polishing surface, said pressing mechanism being configured to apply a first polishing pressure to a central circular area of the workpiece and a second polishing pressure to an annular area of the workpiece that is outside of the central circular area, wherein the first polishing pressure and the second polishing pressure are ~~controllable independently of each other.~~

30 50. The workpiece carrier as claimed in claim 49, ²⁹ wherein said pressing mechanism comprises at least two pressurized chambers to which pressurized fluid is supplied, said at least two

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pressurized chambers comprising a central circular chamber and a first annular chamber located outside of said central circular chamber,

said central circular chamber and said first annular chamber being positionable over the central circular area and the first annular area of the workpiece, respectively,

wherein said first polishing pressure and said second polishing pressure can be created by said pressurized fluid supplied to said central circular chamber and said first annular chamber, respectively.

31/ ~~51.~~ The workpiece carrier as claimed in claim ~~49,~~ ²⁹ wherein said first polishing pressure and said second polishing pressure are controllable independently of each other during polishing.

32/ ~~52.~~ The workpiece carrier as claimed in claim ~~49,~~ ²⁹ wherein said first polishing pressure and said second polishing pressure can be substantially uniformly applied to each of the central circular area and the first annular area of the workpiece.

33/ ~~53.~~ The workpiece carrier as claimed in claim ~~50,~~ ³⁰ wherein said first polishing pressure and said second polishing pressure are controllable by varying said pressurized fluid supplied to said central circular chamber and said first annular chamber, respectively.

34/ ~~54.~~ The workpiece carrier as claimed in claim ~~50,~~ ³⁰ wherein said pressurized fluid comprises pressurized air.

35/ ~~55.~~ The workpiece carrier as claimed in claim ~~50,~~ ³⁰ further comprising a second annular chamber located outside of said first

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annular chamber, wherein said second annular chamber can be positioned over a second annular area located outside of said first annular area of the workpiece so that a third polishing pressure, created by pressurized fluid supplied to said second annular chamber, can be applied to the second annular area of the workpiece.

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56. The workpiece carrier as claimed in claim 55, wherein the pressurized fluid supplied to said second annular chamber comprises pressurized air. 35

57. A workpiece carrier for holding a workpiece and pressing the workpiece against a polishing surface, said workpiece carrier comprising:

a top ring for supporting the workpiece to be polished;
and

at least two pressurized chambers provided in said top ring and to which pressurized fluid is supplied, said at least two pressurized chambers comprising a central circular chamber and an annular chamber located outside of said central circular chamber, said central circular chamber and said annular chamber being positionable over a central circular area and an annular area of the workpiece, respectively,

wherein a first polishing pressure applied to the central circular area of the workpiece and a second polishing pressure applied to the annular area of the workpiece are created by said pressurized fluid supplied to said central circular chamber and said annular chamber, respectively.

58. A polishing apparatus for polishing a surface of a workpiece, said polishing apparatus comprising:

a turntable having a polishing surface thereon;
a top ring for supporting the workpiece to be polished;
and

a pressing mechanism for pressing the workpiece against
said polishing surface, said pressing mechanism being capable of
applying a first polishing pressure to a central circular area of
the workpiece and a second polishing pressure to a first annular
area of the workpiece located outside of the central circular area,
said first polishing pressure and said second polishing pressure
being controllable independently of each other.

59. The polishing apparatus as claimed in claim 58, wherein
said pressing mechanism comprises at least two pressurized chambers
to which pressurized fluid is supplied, said at least two
pressurized chambers comprising a central circular chamber and a
first annular chamber located outside of said central circular
chamber,

wherein said central circular chamber and said first
annular chamber are configured to correspond to the central
circular area and the first annular area of the workpiece,
respectively,

wherein the first polishing pressure and the second
polishing pressure can be created by the pressurized fluid being
supplied to said central circular chamber and said first annular
chamber, respectively.

60. The polishing apparatus as claimed in claim 58, wherein
said first polishing pressure and said second polishing pressure
are controllable independently of each other during polishing.

61. The polishing apparatus as claimed in claim 58, wherein said first polishing pressure and said second polishing pressure can be substantially uniformly applied in each of said areas of the workpiece.

62. The polishing apparatus as claimed in claim 58, wherein said first polishing pressure and said second polishing pressure are controllable by varying fluid pressure.

63. The polishing apparatus as claimed in claim 59, wherein said pressurized fluid comprises pressurized air.

64. The polishing apparatus as claimed in claim 59, further comprising a second annular chamber located outside of said first annular chamber and configured to correspond to a second annular area of the workpiece that is located outside of the first annular area of the workpiece, wherein a third polishing pressure can be applied to said second annular area and is created by pressurized fluid being supplied to said second annular chamber.

65. The polishing apparatus as claimed in claim 64, wherein the pressurized fluid supplied to said second annular chamber comprises pressurized air.

66. A polishing apparatus for polishing a surface of a workpiece, said polishing apparatus comprising:

a turntable having a polishing surface thereon;
a top ring for supporting the workpiece to be polished;
three pressurized chambers provided in said top ring to which pressurized fluid is supplied, said three pressurized chambers comprising a central circular chamber, a first annular

chamber located outside of said central circular chamber, and a third annular chamber located outside of said first annular chamber,

wherein said pressurized chambers can be positioned above the workpiece so that a first polishing pressure can be applied to a central circular area of the workpiece, a second polishing pressure can be applied to a first annular area of the workpiece located outside of the central circular area, and a third polishing pressure can be applied to a second annular area of the workpiece located outside of the first annular area of the workpiece,

wherein the first, second and third polishing pressures can be created by pressurized fluid being supplied to said first central circular chamber, said second annular chamber and said third annular chamber, respectively.

67. A polishing apparatus for polishing a surface of a workpiece, said polishing apparatus comprising:

a turntable having a polishing surface thereon;

a top ring for supporting the workpiece to be polished;

at least two pressurized chambers provided in said top ring to which pressurized fluid is supplied,

said at least two pressurized chambers comprising a central circular chamber and an annular chamber located outside of said central circular chamber,

wherein said central circular chamber and said annular chamber are configured so as to be positionable over a central circular area and an annular area of the workpiece, respectively,

wherein a first polishing pressure can be applied to said central circular area of the workpiece and a second polishing pressure can be applied to the first annular area of the workpiece, said first and second polishing pressures being created by said

pressurized fluid being supplied to said central circular chamber and said first annular chamber, respectively; and

a presser ring vertically movable with respect to said top ring, wherein said presser ring is adapted to be pressed against said polishing surface.

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37 68. A method for polishing a surface of a workpiece, the method comprising:

holding a workpiece by a top ring; and

pressing the workpiece against a polishing surface by applying polishing pressure to the workpiece, said polishing pressure including a first polishing pressure applied to a central circular area of the workpiece and a second polishing pressure applied to a first annular area of the workpiece located outside of said central circular area, said first polishing pressure and said second polishing pressure being controllable independently of each other.

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38.69. The method as claimed in claim 68, further comprising applying a third polishing pressure to a second annular area of the workpiece located outside of the first annular area of the workpiece, the third polishing pressure being controllable independently of the first and second polishing pressures.

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39 70. A method for polishing a surface of a workpiece, the method comprising:

holding a workpiece by a top ring;

pressing the workpiece against a polishing surface by applying polishing pressure to the workpiece, the polishing pressure including a first polishing pressure applied to a central circular area of the workpiece and a second polishing pressure

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applied to a first annular area of the workpiece located outside of the central circular area of the workpiece,

the first polishing pressure and the second polishing pressure being controllable independently of each other; and

pressing an area of the polishing surface around the workpiece with a presser ring.

40 71. A method for polishing a surface of a workpiece, the method comprising:

holding a workpiece by a top ring; and

pressing the workpiece against a polishing surface by applying polishing pressure to the workpiece, the polishing pressure including a first polishing pressure applied to a central circular area of the workpiece, a second polishing pressure applied to a first annular area of the workpiece located outside of the central circular area, and a third polishing pressure applied to a second annular area of the workpiece located outside of the first annular area.

wherein the first polishing pressure, the second polishing pressure and the third polishing pressure are independently controlled with respect to each other.

72. A method for polishing a surface of a workpiece, the method comprising:

holding a workpiece by a top ring;

pressurizing a central circular chamber in the top ring to apply a first pressure to a central circular area of the workpiece;

pressurizing a first annular chamber in the top ring to apply a second pressure to a first annular area of the workpiece located outside of the central circular area of the workpiece; and